

Electrical Fires

Portable Electrical Appliances

Understanding the Risk

Portable electrical appliances can be found in almost all types of occupancy e.g. offices, shops, factories, warehouses etc and includes a wide range of items such as photocopiers, fax machines, computers, drills etc.

In this context portable electrical appliances can be considered to be any electrical item, which can or is intended to be moved whilst connected to an electrical supply. Typically the electrical item concerned will have a flexible cable with a plug, for connection to an electrical socket outlet. Extension leads are also regarded as portable electrical appliances.

In addition to personal injuries a number of fires each year are caused by faulty portable electrical appliances

Fires caused by faulty portable electrical appliances are often the result of overheating, due to inadequate maintenance or improper use e.g.

- Damaged cables or plugs
- Loose connections or taped joints
- Use of incorrectly rated fuses

In addition to being good risk management practice the provision of adequate electrical maintenance is also a legal requirement, as per the following legislation:

- [The Health & Safety at Work Act 1974](#)
- [The Electricity At Work Regulations 1989](#)
- [The Provision & Use of Work Equipment Regulations 1998](#)
- [The Management of the Health & Safety at Work Regulations 1999](#)

The Electricity At Work Regulations 1989 state that any electrical system must be maintained and used in such a manner as to prevent danger – portable electrical appliances are classed as part of any such system and are therefore required to be inspected in order to comply with these regulations.

Related Loss Statistics

According to the document Fire Statistics UK 2005 published by the Department for Communities & Local Government: London in March 2005 the fire & rescue services attended 136,600 accidental fires in buildings other than dwellings during the period 2000 to 2005. Of these fires the main cause, approx 30% (38,100) was faulty appliances and leads as highlighted in the chart below.



During this same period according to statistics collated by the Fire Protection Association (FPA), there were a total of 346 reported fire losses that were electrical in origin, in occupancies excluding dwellings. The reported losses resulting from these fires totalled over £178m, equating to an average loss per incident of over £50,000.

Whilst it is not possible to separate out losses specific to portable electrical appliances it is clear that faulty portable electrical appliances are a major cause of fires and that adequate measures need to be taken to prevent or mitigate the risk they present.

Controlling the hazard

In order to prevent or mitigate the fire risks associated with portable electrical appliances it is necessary for an adequate system of electrical maintenance to be operated involving a combination of regular inspection and testing.

An adequate system of electrical maintenance for portable electrical appliances will typically involve:-

- Ongoing visual checks, by the equipment's user
- Periodic, formal checks, by a trained person(s)
- Combined inspection and testing

Visual checks of the outside of the appliance, including its cable and plug by the user, either prior to use or on a daily basis can identify obvious signs of damage as soon they become apparent, thus avoiding a potentially hazardous situation developing.

Things for the user to check for include:

- Signs of damage or missing parts
- Ensuring that the cable is firmly gripped where it enters the plug with no internal wires showing
- No taped electrical connections used

Periodic formal checks by a trained person(s) help to reinforce the ongoing visual checks by the equipment's user. In addition to a visual check of the equipment these checks should involve removal of the plug cover, to ensure that the plug is correctly wired and fitted with the correctly rated fuse.

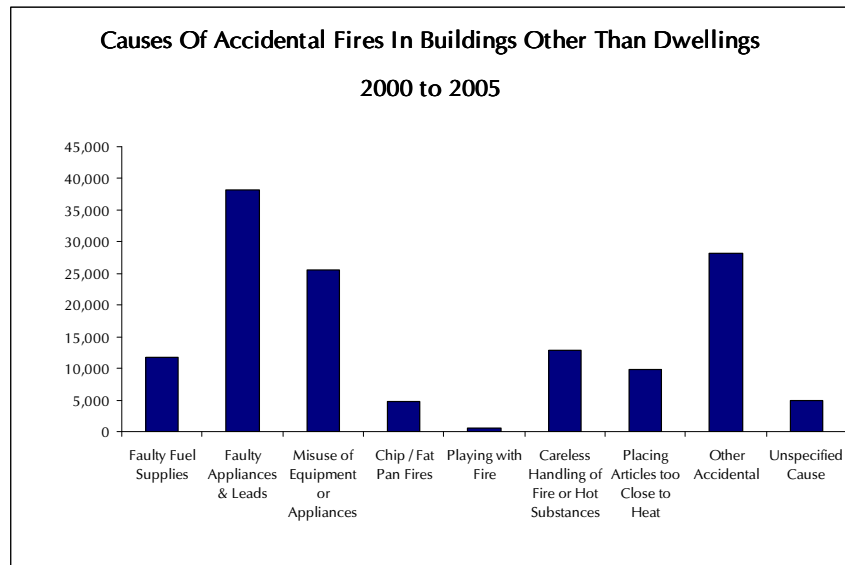
If any faults are discovered during either the ongoing visual checks by the equipments user or during the periodic formal checks the appliance(s) concerned should be taken out of service immediately until the fault has been repaired by a competent electrician assuming this is possible.

As not all faults will be detected by visual checks it is necessary for portable electrical equipment to also periodically undergo combined inspection and testing including earth bond continuity testing, insulation resistance testing and functional checks. As these combined inspection and tests are more in depth than the visual checks by the equipment's user or the periodic formal checks by a trained person they should only be carried out by a competent person as defined in the Electricity At Work Regulations 1989.

The frequency of the inspection and testing required will depend on the risk of the portable electrical appliance(s) becoming faulty based on factors such as the type of appliance, the nature of its use and the environment in which it is used. For example an office computer would not be expected to be inspected as frequently as a hand held power tool used on a factory floor.

The Health & Safety Executive do not specify any absolute requirements regarding the frequency of inspection and testing, except to say that "regular inspection of equipment is an essential part of any preventative maintenance program"

In order to establish an adequate system of electrical maintenance for portable electrical appliances it is recommended that the following steps are taken:-



- Create a register of all portable electrical appliances used as this will help ensure that no items are missed. A system will also need to be established for removing items from the register as they are disposed of and for adding new or replacement items
- Ideally employees should not be allowed to bring their own portable electrical appliances onto the premises, but if this is to be allowed these items will also need to be included in the register and preferably inspected for electrical safety prior to being allowed to be used
- Establish a procedure for ongoing visual checks, by the equipment's users, to include the provision of adequate information and training to assist them in this role. These checks need not be documented, except where an item is found to be faulty
- Establish a frequency and procedure for periodic, formal checks, which should be carried out by responsible persons, who have received adequate information and training to enable them to undertake the checks. Records of formal checks should be kept
- Establish a frequency and procedure for combined inspection and testing, based on a risk assessment of the type of portable electrical appliances used, the nature of their use and the environment in which they are used. The procedure should include the actions to be taken in respect of any items, which fail the inspection and test
- Inspections and tests should be conducted by a competent person(s) as defined in the Electricity At Work Regulations 1989 with the results of the inspections and tests to be fully documented.

For more information, ask your AIG Risk Engineer.

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